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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/607,039

06/27/2003

Tsutomu Horie

1095.1280

6413

21171 7590 11/16/2007
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EXAMINER

AKHAVANNIK, HADI

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

11/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/607,039 | | HORIE ET AL. | |
| | Examiner | | Art Unit | |
| | Hadi Akhavannik | | 2624 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 07 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 3, 4, 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>4/25/07</u> . | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/6/07 has been entered.

Response to Arguments

Applicant's arguments filed 9/7/07 have been fully considered but they are not persuasive.

With respect to the independent claims, the Applicant argues that Shishido in view of Chen does not teach the amendments to the independent claims. The Examiner believes that Shishido discloses not registering a defect if its smaller than a sensitivity in column 16 lines 8-24.

The argument with respect to claims 3-4 and 8-9 are persuasive and these claims are now objected to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2624

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 5-7, 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shishido et al. (6865288, referred to as "Shishido" herein) in view of Chen et al. (6721695, referred to as "Chen" herein).

Regarding claim 1, Shishido discloses an inspection device that identifies defects on a subject of inspection including photomasks or products fabricated using photomasks (see column 6 lines 39-48, which discloses a pattern inspection device),

comprising: a reference data generator that generates reference data that is based on design data (column 7 lines 26-44 which discloses generating reference data to compare against the acquired image. The reference data is in the form of a CAD image).

an image acquiring unit that detects an image of the subject of the inspection and generates data to be inspected (column 7 line 45 to column 8 line 38 discloses an image acquiring method which inherently sends image data to the system);

a comparator that compares said data to be inspected with said reference data and detects a defect (see figure 1, item 60 and column 8 line 39 to column 9 line 5 discloses an image comparator);

a reference data extractor that extracts a region of said reference data that corresponds to where said detected defect exists; a defect registration determinator that refers a standard to region and determines whether to register said defect; and a defect memory that records said defect for which registration has been determined. (Column 11 lines 41-67 discloses a defect judging means that judges a defect against a

Art Unit: 2624

predetermined standard to decide whether or not to register the occurrence as a defect or not. If the region is determined to be a defect then the defect is stored).

Determining a non-defect when the detected defect is smaller than a set sensitivity (see column 16 lines 8-24 which discloses having a threshold sensitivity setter based on the data to better register the defects. Inherently a value that is less than a threshold will not be a defect because the system will only look for values greater than a threshold).

Shishido does not disclose using sensitivity codes.

Chen discloses including sensitivity class codes that are used to differentiate designated pattern functions by means of inspection sensitivity (see figure 3, column 3 line 59 to column 4 line 5, and column 4 lines 38-61, which disclose including sensitivity class codes that sets the threshold for each type of photomask);

an inspection sensitivity setter that allocates desired inspection sensitivities for said sensitivity class codes (see column 5 lines 10-24 discloses setting the inspection sensitivity for each class code);

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Shishido a sensitivity class setting means as taught by Chen. The reason for the combination is because it makes for a more robust system that will reduce the amount of false detects (see motivation by Chen in column 5 lines 21-25). Further, both inventions are from the same field of endeavor of defect detection.

Regarding claim 2, Chen discloses that the sensitivity class codes are expressed by a symbol (see Chen, figure 3, bottom row labeled "tech nodes", discloses multiple symbols the represent each sensitivity code).

Regarding claim 5, Chen discloses that it is possible to set said sensitivity class codes for regions other than those associated with said pattern functions (column 4 lines 6-25 and figure 1 discloses placing multiple sensitivy codes on a test plate to check all regions of the photomask).

Regarding claim 6-7 and 10, these are the method claims of claim 1-2 and 5 and the rejection of claim 1-5 addresses all limitations of claim 6-7 and 10.

Regarding claim 13 please see the rejection of claim 1 as it discloses all aspects of claim 13.

2. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shishido in view of Chen as applied to claim 1 above, and further in view of Usui et al. (6617083, referred to as "Usui" herein).

Regarding claims 11-12, the rejection of claims discloses all aspects of claims 11-12 except that the pattern functions are selected from a group of power supply lines, clock signal lines, address signal lines, data input-output signal lines and control signal lines.

Usui discloses using a rule based correction based on a specific pattern (see column 6 lines 4-55 as it discloses that each subarea has its own set of rules. Column 8 lines 38-43 discloses that the subareas are semiconductor circuit patterns. The examiner notes that power supply lines, clock signal lines, data input-output signal lines

Art Unit: 2624

and control signal lines are also common semiconductor circuit patterns that are used to bias the semiconductors).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Shishido and Chen specific pattern types as taught by Usui. The reason for the combination is because it allows for a system that is able to check the accuracy of specific portions of a mask and circuit board to ensure proper fabrication.

Allowable Subject Matter

Claims 3-4 and 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shibata et al. (2002/0027653)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on 517-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA
11/9/07



BRIAN WERNER
SUPERVISORY PATENT EXAMINER